

WHAT IS CLAIMED IS:

1. A network relaying apparatus comprising:  
a plurality of I/O ports connected to network terminals;

means for storing information relating to a connecting state of said network terminal, said information indicating correspondence between each of said I/O ports and a network address of said network terminal connected to each of said I/O ports;

means for storing user authentication information for each of said network addresses;

packet communicating means for transmitting and receiving packets through said I/O ports;

packet relaying means for determining a destination of the packet received from each of said plurality of I/O ports by said packet communicating means on a basis of the information held by said means for storing the information relating to the connecting state of said network terminal and instructing said packet communicating means to transmit said received packet; and

user authenticating means for determining if the user authentication information specified against said network address is correct on a basis of the user authentication information stored in said means for storing the authentication information,

wherein said packet relaying means operates to learn correspondence between the I/O port for receiving said received packet and said source network address on a

04533-1000

basis of the source network address information contained in said received packet, request the user authentication information for the source network terminal if the change of the content of said means for storing the information relating to the connecting state of the network terminal is required by said learned result, specify the user authentication information transmitted by said source network terminal, instruct said user authenticating means to execute the user authentication, and change the content of said means for storing the information relating to the connecting state of said network terminal and relay said received packet if the user is authenticated to be correct.

2. A network relaying apparatus as claimed in claim 1, wherein said network relaying device is a LAN switch including a virtual LAN.

3. A network relaying apparatus as claimed in claim 1, wherein if the user authentication indicates the user is not correct for said network address, said packet communicating means operates to suppress the change of the content of said means for storing the information relating to the connecting state of said network terminal and discard the received packet having caused the change.

4. A network relaying apparatus as claimed in claim 1, wherein the user authentication information stored in said storing means contains a contact mail address of the concerned user, and said user authenticating means operates to create a message for indicating that a packet having the incorrect user authentication information has been trans-

09455363 120599

mitted to a contact mail address registered in said means for storing the user authentication information if the user authentication information is determined to be incorrect for said network address as a result of said user authentication and to instruct said packet communicating means to transmit said message.

5. A network relaying apparatus as claimed in claim 1, further comprising means for storing a contact mail address of an administrator of said network relaying device, wherein said user authenticating means operates to create a message for indicating that a packet having the incorrect user authentication information has been transmitted to a correct mail address of an administrator of said network relaying apparatus if the user authentication is determined to be incorrect for said network address as a result of said user authentication and to instruct said packet communicating means to transmit said message.

6. A network relaying apparatus as claimed in claim 1, wherein said network address is an IP address.

7. A network relaying apparatus as claimed in claim 1, wherein said network relaying means communicates by using a mobile IP.

8. A communication control method in a communications network system having plural network terminals and a network relaying device connected through a communication path, said network relaying device having a plurality of I/O ports connected with said network terminals and means for storing information relating to a connecting state of

094533 140500

said network terminal, said information indicating correspondence between each of said I/O ports and a network address of each of said network terminals connected to said I/O ports, comprising the steps of:

registering user authentication information for each network address of each of said network terminals;

receiving packets transmitted by a first network terminal through said I/O port;

if a source network address contained in said received packet does not correspond to said receive I/O port stored in said means for storing the information relating to a connecting state of said network terminal, updating a content of said means for storing a connecting state of said network terminal so that said source network address may correspond to said receive I/O port;

determining a destination of said received packet based on the information held in said means for storing the information relating to a connecting state of said network terminal and transmitting said received packet; and

when updating the content of said means for storing the information relating to a connecting state of said network terminal, requesting user authentication information for said first network terminal, for doing user authentication on a basis of the user authentication information registered for each network address if said source network address does not correspond to said receive I/O port stored in said means for storing the information relating to a connecting state of said network terminal,

09455353 120599



12. A communication control method as claimed in claim 8, further comprising the step of:

registering a contact mail address of an administrator of said network relaying device; and

if the correct user authentication information cannot be obtained from said first network terminal, transmitting to a contact mail address of the administrator of said network relaying apparatus a message for indicating that a packet having incorrect user authentication information is transmitted.

13. A communication control method as claimed in claim 8, wherein said network address is an IP address.

14. A communication control method as claimed in claim 13, wherein said network relaying apparatus is a LAN switch including a virtual LAN.

15. A communication control method as claimed in claim 14, wherein if the correct user authentication information cannot be obtained from said first network terminal, a message for indicating transmission of a packet having incorrect user authentication information is transmitted to all the network terminals of the VLAN whose address belongs to the source network address of said received packet.

16. A communication control method as claimed in claim 8, further comprising the steps of:

when determining a destination of said received packet, if the correspondence between the destination network address of said received packet and the I/O port

004553-120500

needs the update of the content of said means for storing the information relating to a connecting state of said network terminal, requesting user authentication information for the network terminal of said destination network address for the purpose of doing the user authentication on a basis of the user authentication information registered at each network address, and updating the content of said means for storing the information relating to a connecting state of said network terminal and transmitting said received packet if no correct user authentication information can be obtained.

17. A communication control method as claimed in claim 8, further comprising the step of:

requesting the user authentication information for each network address held in said means for storing the information relating to a connecting state of said network terminal, for the purpose of periodically doing the user authentication on a basis of the user authentication information registered in each network address.

18. A program for controlling communications in a communications network system having a plurality of network terminals and a network relaying device through a communication path, said network relaying apparatus having a plurality of I/O ports connected with said network terminals and means for storing information relating to a connecting state of said network terminal, said information indicating correspondence between each of said I/O ports and a network address of each of said network terminals

0945333 120690

connected with said I/O ports, said relaying apparatus operating to receive packets transmitted by said network terminals through said I/O ports, if a source network address contained in said received packet does not correspond with said receive I/O port stored in said means for storing the information relating to a connecting state of said network terminal, update the content of said means for storing the information relating to a connecting state of said network terminal so as to make the correspondence correct, determine a destination of said received packet on a basis of the information stored in said means for storing the information relating to a connecting state of said network terminal, and transmit said received packet, said program containing a program code taking the steps of:

registering user authentication information at the network address of each of said network terminals; and

when updating a content of said means for storing the information relating to a connecting state of said network terminal, if said source network address does not correspond with said receive I/O port stored in said means for storing the information relating to a connecting state of said network terminal, requesting user authentication information for said first network terminal for doing user authentication on a basis of the user authentication information registered at said network address, and changing a content of said means for storing the information relating to a connecting state of said network terminal and

00455353 420500



**SECRET**